

We claim:

1. A converter circuit comprising a storage inductor, one end of which is connected to a reference potential and an opposite end is connected to a supply connection and to a secondary storage capacitor, an output end of which is connected to the reference potential, wherein a primary storage capacitor is connected to the input of the storage inductor, an input of the primary storage capacitor can be connected to the reference voltage through a primary switching element and the secondary storage capacitor is connected in series with a secondary switching element.
2. The converter circuit in accordance with claim 1, wherein the primary switching element is bridged by a diode element polarized in the reverse direction for a supply voltage present at the supply connection.
3. The converter circuit in accordance with claim 1, wherein the secondary switching element is bridged by a diode element polarized in the forward direction for a supply voltage present at the supply connection.
4. The converter circuit in accordance with claim 1, wherein the storage inductor is an air-core inductor.
5. The converter circuit in accordance with claim 1, wherein a filter reactor is connected between the supply connection and primary storage capacitor.
6. The converter circuit in accordance with claim 5, wherein the filter reactor is an air-core inductor.

7. The converter circuit in accordance with claim 1, wherein the value of the inductance of the filter reactor is greater than the value of the inductance of the storage inductor.
8. The converter circuit in accordance with claim 1, wherein the primary switching element is an npn bipolar transistor.
9. The converter circuit in accordance with claim 1, wherein the secondary switching element is a pnp bipolar transistor.
10. The converter circuit in accordance with claim 1, wherein the secondary storage capacitor is an electrostrictive component.
11. The converter circuit in accordance with claim 1, wherein the secondary storage capacitor is a piezoelectric element.
12. The converter circuit in accordance with claim 11, wherein the piezoelectric element is a piezoelectric actuator suitable for actuating valves in an internal combustion engine.
13. The converter circuit in accordance with claim 11, wherein the piezoelectric element is a piezoelectric actuator manufactured using multilayer technology.

14. A converter circuit comprising
- a storage inductor having a first and a second terminal, the first terminal being coupled with a reference potential;
  - a secondary storage capacitor coupled with the second terminal;
  - a primary storage capacitor coupled between an input of the converter and the second terminal, and
- a primary switching element for coupling the primary storage capacitor with a reference voltage; and
- a secondary switching element for coupling the secondary storage capacitor with the reference potential.
15. The converter circuit in accordance with claim 14, wherein the primary switching element is bridged by a diode element polarized in the reverse direction for a supply voltage present at the input of the converter.
16. The converter circuit in accordance with claim 14, wherein the secondary switching element is bridged by a diode element polarized in the forward direction for a supply voltage present at the input of the converter.
17. The converter circuit in accordance with claim 14, wherein the storage inductor is an air-core inductor.
18. The converter circuit in accordance with claim 14, wherein a filter reactor is connected between the input of the converter and primary storage capacitor.
19. The converter circuit in accordance with claim 18, wherein the filter reactor is an air-core inductor.

20. The converter circuit in accordance with claim 14, wherein the value of the inductance of the filter reactor is greater than the value of the inductance of the storage inductor.

21. The converter circuit in accordance with claim 14, wherein the primary switching element is an npn bipolar transistor.

22. The converter circuit in accordance with claim 14, wherein the secondary switching element is a pnp bipolar transistor.

23. The converter circuit in accordance with claim 14, wherein the secondary storage capacitor is an electrostrictive component.

24. The converter circuit in accordance with claim 14, wherein the secondary storage capacitor is a piezoelectric element.

25. The converter circuit in accordance with claim 24, wherein the piezoelectric element is a piezoelectric actuator suitable for actuating valves in an internal combustion engine.

26. The converter circuit in accordance with claim 24, wherein the piezoelectric element is a piezoelectric actuator manufactured using multilayer technology.